



Environmental Performance Report

Dexter Corporation
Electronic Materials
Londonderry, NH

1998 Reporting Year

Dexter Corporation Electronic Materials has completed its first year of participation in the EPA StarTrack Program. This Environmental Performance Report satisfies one of the annual requirements of the Program. It includes calendar year 1998 (January 1, 1998 through December 31, 1998) and can be considered our Base Line Report. The compliance audit for this Reporting Year was conducted June 24-25, 1999 and is also included. For purposes of normalizing reporting, pounds of production will be used.

Beverly Fischer, Manager, Health, Safety and Environmental Affairs completed the Report with the assistance of Shelley Butera.

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Facility Profile

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Facility Overview

Dexter Corporation Electronic Materials (DEM) produces and sells process chemistries used in the manufacture of printed circuit boards. Most of the products are water based and are sold both nationally and internationally.

The facility built in 1994 incorporates features that provide a safe workplace for our employees and minimize impact to the surrounding environment. The facility employs between 50 and 60 employees.

The 63,000 square foot facility includes a manufacturing unit, warehousing and laboratories. There is an interior above ground tank farm used to store large volume raw materials and a covered tanker loading/unloading area. Waste materials are stored inside the building.

The site plot is sloped and paved to contain materials in the event of an unplanned event. Inside flooring is angled for containment as well. Product manufacturing tanks are kept empty except during production hours. The entire area surrounding the facility is covered by 2 inches of asphalt, and closing 1 valve can shut off the interconnected storm drain system.

The facility resides on approximately 14 acres and is surrounded by thriving wetlands.

Policies, Organization & Management Systems

“Noncompliance is not an option. Compliance is not enough. We go beyond compliance and do what is most effective.”

-K. Grahame Walker

Chairman and CEO, The Dexter Corporation, July 23, 1996

Dexter Corporation Electronic Materials subscribes to the Corporation’s HSE Policy.

It is the policy of Dexter Corporation to be an environmentally pro-active specialty materials company.

As a responsible corporate citizen, Dexter is committed to compliance with all legal requirements applicable to its operations worldwide.

Dexter will carry out this policy by continually improving management systems for compliance and risk control in all aspects of its businesses. Dexter’s management systems will be supported by on going auditing programs, including corrective action to manage all identified risks to health, safety or the environment.

To ensure that its health, safety and environmental policy is implemented worldwide, Dexter will:

- Educate employees on health, safety and environmental issues and responsibilities;
- Control pollution at the source whenever possible;
- Make protection of health, safety and the environment as essential factor in the design of products and processes;
- Conserve resources through appropriate reuse, recycling or reclamation of materials and products;
- Participate actively in industry, government and community efforts to promote health, safety and the environment;
- Measure and report to management Dexter’s progress in reducing potentially adverse impacts on health, safety and the environment;
- Integrate health, safety and environmental objectives into strategic planning and business operations at all levels;
- Provide appropriate recognition for achievements in health, safety and environmental issues.

Every Dexter employee is responsible for assuring that both the spirit and intent of this policy are fully implemented throughout the company. It is a fundamental duty of managers to be informed on all health, safety and environmental issues. Every employee

is encouraged to inform higher management promptly of any deviation from the legal requirements for compliance and the directives of this policy.

As a responsible corporate citizen, Dexter Corporation, Electronic Materials is committed to:

1. Compliance with all applicable regulatory requirements;
2. Controlling pollution at the source whenever possible; and
3. Continuous improvement of Health, Safety and the Environment through process improvement and teamwork.

Dexter has initiated management programs that achieve the objectives of this policy:

1. Pro-active facility design featuring spill containment, installation of pollution control equipment to minimize odors and process control equipment to minimize the likelihood of leaks or spills, all in an effort to control pollution at the source;
2. Corporate audit program using internal expertise to ensure compliance and that Best Management Practices are used. Audits are conducted on a quarterly basis and rotated throughout the organization;
3. Publication and distribution of our Corporate Environmental Policy with which every Dexter site complies;
4. Corporate and Business Unit sponsorship of our facility's Star Track activities, ISO 14001 certifications and OSHA VPP Star Programs at other sites;
5. Recognition awards for health, safety and environmental achievement for individuals and teams by both the Corporation and Business Unit;
6. Program to retest all out of date material to blend off or re-label as appropriate instead of disposing as waste;
7. Programs to recycle fluorescent tubes, office paper and printed circuit boards;
8. Bar-coding raw materials and manufacturing instructions to minimize the potential for generation of hazardous waste;
9. Integration of safety and environmental requirements into all employees' jobs;
10. Participation in EPA's 33/50 and Greenlights programs which fostered pollution prevention for environmental improvement.

The Plant Manager has overall responsibility for environmental management at the Londonderry facility. The Manager, Health, Safety and Environmental Affairs (HSE) supports this activity on a daily basis. The HSE Manager reports to the Plant Manager and has a dotted line reporting responsibility to the DEM Vice President, Health, Safety and

Environmental Affairs, who in turn, has dotted line responsibility to the corporate Vice President, Environmental and Process Management.

The HSE Manager has cross-functional support from other departments at the facility including Human Resources, Supervisors, and Laboratory Personnel. The following matrix identifies lead (L) and support (S) responsibilities.

	Plant Mgr.	HSE Mgr.	HR	Main't	PIC	R&D	Supr	Finance	Admin	Emp
EMS Management Rep.		L								
Communicate importance of environmental management	L	S					S			
Coordinate auditing efforts	S	L					S	S		
Track/analyze new regulations (and maintain library)		L								
Obtain permits and develop compliance plans	S	L						S		
Prepare reports required by regulations		L								
Coordinate communications with interested parties	L	S								
Train employees		L	S				S			
Integrate environmental into recruiting practices			L							
Integrate environmental into performance appraisal process	S		L							
Communicate with contractors on environmental expectations	S	S		L	L					
Comply with applicable regulatory requirements	L	L	S	S	S	S	S	S	S	S
Conform with organization's EMS requirements	L	L	S	S	S	S	S	S	S	S
Maintain equipment/tools to control environmental impact				L						
Monitor key processes		S					L			
Coordinate emergency response efforts	S	L					S			
Identify environmental aspects of products, activities, or services	S	L			S	S	S	S		
Establish environmental objectives and targets	L	S					S			
Develop budget for environmental management	L	S						L		
Maintain EMS records (training, etc.)		L	S						S	
Coordinate EMS document control efforts		S							L	

Many of our management systems maintained as part of our ISO9001 certification. This includes but is not limited to training, manufacturing instructions, new product development. Other programs have been written under the sponsorship of the HSE department. These programs include, but are not limited to, change management, recycling, and recently, Tier II procedures.

Community Relationships

Community impact is included in Dexter's policies and procedures.

1. As part of the Londonderry facility's Environmental Aspects Identification procedure, points are awarded for normal operating conditions that would be of concern to stakeholders, including the community. These aspects are reviewed annually to determine their appropriateness for ongoing activities at the site and are used to determine objectives and targets that correspond to our EHS policy.
2. External communications are composed of responses to requests for information. The Plant Manager or their delegate reviews all requests for information and responds on behalf of the company. Information provided by DEM to external parties will be:
 - Understandable and adequately explained; and
 - Present an accurate and verifiable picture of Dexter and its environmental management system, its environmental performance and other related matters.
3. Coordination with local emergency planning is ongoing. All members of the fire department have visited the plant and reviewed our materials, how products and raw materials are stored, what kind of response equipment/supplies would be available to the fire department in case of an emergency, as well as, our contingency plan procedures. These visits have fostered a good working relationship with the fire department, who in return, help with our fire safety training and drills.

The Risk Management Plan (RMP) under the Clean Air Act Amendments (CAAA) 112 (r) does not apply to this facility. However, under the General Duty Clause, CAAA 112 (r)(1), we have reviewed the possible release scenarios for our materials in an effort to identify possible serious off-site consequences. The materials in question at this facility include ammonium hydroxide, hydrochloric acid, nitric acid, ethylenediamine, acetylene, propane and hydrogen.

Modeling using conservative assumptions shows that the materials dissipate before leaving the site. RMP Comp version 1.06 was used to provide backup information to the scenarios. EPA assumptions were used to define the incident. Because of the volume, concentration, vapor pressure and rates of release for our materials on-site, the distances calculated by the RMP Comp were extremely conservative.

Releases to the properties abutting the site are not a probable scenario due to the containment design of the facility.

Operational Metrics

The metrics provided are based upon the StarTrack Environmental Performance Reporting guidance.

Inputs: Energy Usage.

Electricity	1998
Total Electricity usage (kWh)	802,200
Total Electricity usage (million BTU)	.000235

Natural Gas	1998
Total Gas usage (million BTU)	4,017.7

Total Energy usage (million BTU)	4,017.70
Million BTU/ pounds produced	.00026

Inputs: Water Usage.

Water Consumption	1998
Total Process Water (gallons)	735,810
Total Other* Water (gallons)	1,478,566
Total Water usage (gallons)	2,214,376
Total Water Usage/pounds produced	.1458

*Other: Sanitary, rinse tanks, tank cleaning, scrubber, and laboratory.

Toxic Chemical Use

Following is a list of chemicals for which Dexter Corporation Electronic Materials requires reporting for 1998 to US EPA under SARA 313. (TRI) These materials are processed and sold as constituents of our products. The only material or group requiring a Form R report was glycol ethers. All other materials were reported using Form A.

Also listed is DEM's current status regarding other chemicals of concern.

Toxic Chemical Use (SARA 313)

	<u>1998 (lbs.)</u>
Glycol Ethers	366,611
Methanol	59,249
Nitrate Compounds	164,291
Nitric Acid	594,021
Phosphoric Acid	34,100

“Ozone depleting substances”

This site does not use “ozone-depleting substances” in products or their manufacture.

Polychlorinated Biphenyl (PCB's)

The site is new and does not contain transformers or ballasts with PCB's.

Asbestos

The site is new and does not contain asbestos as a construction material.

Air Emissions

Air emissions from the site are considered insignificant. This result was determined by evaluation of our raw materials, products and process by an outside consultant. The analysis was accepted by the New Hampshire Department of Environmental Services – Air Resources Division, which resulted in their determination January 1998, that air permits were not required for this facility. Since that time, there have been no significant changes in the process that would require further modeling or reconsideration of the current status. The site maintains records to demonstrate that emissions of air pollutants have a negligible effect on state mandated “ambient air levels” (AAL).

The facility uses natural gas in a small boiler to heat process waters and uses small gas-fired heaters to provide temperature control. The amount of gas used is low, as seen in the input section of this report and the equipment is well below the capacity requiring permitting. The volumes are therefore exempt from reporting. Greenhouse gases generated are insignificant and exempt for reporting purposes.

In spite of the fact that they are not necessary to achieve the state “AAL’s”, the facility uses scrubbers to eliminate any air emissions and minimize odors from blend tanks and from equipment located in the application lab. The scrubbers remove and neutralize the corrosive constituents in the exhausted air stream and drain to the wastewater treatment system, where effluents are treated prior to discharge to the City of Manchester POTW.

Waste Water Emissions

Dexter Corporation Electronic Materials discharges sanitary and treated process waters to the Town of Londonderry which in turn discharges to the City of Manchester Publicly owned Treatment Works (POTW). The site holds a discharge permit with the Town of Londonderry.

There are 2 primary waste streams:

1. Corrosive rinses from the cleaning of production blend tanks, drums, totes, and neutral waste from the scrubber operations ;
2. Rinse water from the application laboratory printed circuit board processing operations.

Neutralization is performed on both waste streams and in addition, metal removal is done to the application laboratory waste stream using ion exchange. There are two metals of concern generated in the application laboratory: copper and lead. Annual discharge of these metals is:

Metal	1998
Copper	<.1#
Lead	<.1#

Analyses for volatile organic and semi-volatile organic compounds indicate they are not present in significant amounts.

Component	1998
BOD	3440#
COD	35964#

Hazardous Waste

The site is a large quantity generator of hazardous waste. Most of the materials are characteristically corrosive although the site also will generate some oxidizers, flammables and one “U” listed material. The elementary neutralization system used to treat the rinse water generated by production operates under a New Hampshire Department of Environmental Services Hazardous Waste Limited Permit because of the corrosive characteristic of the water generated.

	1998
Hazardous Waste (pounds)	45,594
Production (pounds)	15,185,621
Hazardous Waste (pounds/pounds produced)	.00300
Non-hazardous Waste (pounds)	12,125
Non-hazardous Waste (pounds/pounds produced)	.000798

Product Performance

Our product line is water based. The use of organic solvents as primary carrier in our products has been eliminated.

Our R&D Laboratory reviews all raw materials and applications in an effort to design products that are health, safety and environmentally friendly. Dexter considers this Design for the Environment approach to be important for our employees and site as well as for our customers. Using cross-functional teams, we pre-screen raw materials to prevent use of high hazard chemicals in our products as well as the process we will use for their manufacture.

We package our products as required by our customers. We have worked closely with several customers to package our products in tanker or tote volumes so containers are not a disposal issue. Customers find this to be a cost saving and an environmentally friendly alternative.

Audits

Compliance

In support of the site's Star Track Program, a compliance audit was conducted at the Londonderry site of June 24 - 25, 1999. The audit team consisted of two Dexter internal auditors and a third party certifier. The audit consisted of a plant tour and document review.

Summary - Compliance management systems were found to be in place and effective and operators were knowledgeable of their environmental responsibilities. **The audit team discovered no noncompliance.**

1. **RCRA** – Reviewed documentation of training, arrangements with local authorities, manifests, contingency plan, waste characterization, reporting. All documents were in place, up to date, and available. Toured and reviewed documentation of waste storage area and satellite sites. All waste was within the allowable limit, inspections were completed and containers properly labeled. **Recommendation:** Apply floor coating to a small sump in bulk storage area. Post emergency phone numbers at each phone in vicinity of satellite area.
2. **Clean Water Act** – Reviewed documentation including permit, monitoring and storm water permit. **Recommendation:** Discuss analytical methods with local authorities and document.
3. **Clean Air Act** – Reviewed documentation on file including the General Duty RMP analysis. No recommendations were given.
4. **EPCRA** – Reviewed Tier II report, TRI report, Contingency Plan, MSDS's. No recommendations were given.
5. **TSCA** – Reviewed TSCA compliance including documentation on file and procedures. No recommendations were given.

Environmental Management Systems

The EMS audit was conducted on September 27, 1999.